

1 **SECTION 9-06, STRUCTURAL STEEL AND RELATED MATERIALS**
2 **October 28, 1996**

3 This section is revised by adding the following:
4

5 **9-06.16 Roadside Sign Structures**

6 All bolts shall conform to ASTM A 325M. Washers for bolts shall be hardened
7 steel per AASHTO M 293M.
8

9 Posts for single post sign structures shall meet the requirements of ASTM A 36M
10 or ASTM A 53 Grade B.
11

12 Posts for multiple post sign structures shall meet the requirements of AASHTO M
13 183M. Posts meeting the requirements of AASHTO M 222M, AASHTO M 223M,
14 or ASTM A 572M Grade 345 may be used as an acceptable alternate to the
15 AASHTO M 183M posts. All steel not otherwise specified shall conform to
16 AASHTO M 183M.
17

18 Triangular base stiffeners for one-directional multi-post sign posts shall meet the
19 requirements of AASHTO M 222M, AASHTO M 223M, or ASTM A 572M Grade
20 345.
21

22 Base connectors for multiple directional steel breakaway posts shall conform to
23 the following:
24

25 brackets	Aluminum Alloy 6061 T-6
26 bosses for Type 2B brackets	ASTM A 582
27 coupling bolts	ASTM A 325M
28 anchor bolts	ASTM 304 stainless steel for threaded
29	portion. AISI 1038 steel rod and AISI
30	1008 coil for cage portion.
31	

32 Anchor couplings for multiple directional steel breakaway posts shall have a
33 tensile breaking strength range as follows:
34

35 Type 2A	75 600N to 93 400N
36 Type 2B	209 000N to 253 500N
37	

38 For multi-directional breakaway base connectors, shims shall be fabricated from
39 pregalvanized sheet steel. For one-directional breakaway base connectors,
40 single post or multi-post, shims shall be fabricated from brass conforming to
41 ASTM B 36.
42

43 **9-06.5(3) High Strength Bolts**

44 The fourth paragraph is revised to read:
45

46 Nuts for high strength bolts shall meet the following requirements:
47

48 AASHTO M 164M Bolts	
49 Black Type 1 and 2	AASHTO M 291M Class 8S, 8S3,
50	10S, and 10S3.

1		AASHTO M 292M Grade 2H
2	Black weathering Type 3	AASHTO M 291M Class 8S and 10S
3	Galvanized Type 1 and 2	AASHTO M 291M Class 10S
4		AASHTO M 292M Grade 2H
5		
6	AASHTO M 253M Bolts	
7	Black Type 1 and 2	AASHTO M 291M Class 10S
8		AASHTO M 292M Grade 2H
9	Black weathering Type 3	AASHTO M 291M Class 10S3
10		
11	The fifth paragraph is revised to read:	
12		
13	AASHTO M 291M Class 10S and 10S3 shall also have a minimum Rockwell	
14	hardness of HRc 24.	
15		
16	The reference to "Section 7.4" in the third sentence of the sixth paragraph is	
17	revised to read "Section 7.8".	
18		
19	The reference to "AASHTO M 291M" in the first sentence of the seventh	
20	paragraph is revised to read "AASHTO M 291".	
21		
22	The first sentence of the eighth paragraph is revised to read:	
23		
24	Washers for AASHTO M 164M and M 253M, Type 1, 2, and 3 bolts shall	
25	meet the requirements of AASHTO M 293M (ASTM F 436M).	
26		
27	The references to "AASHTO M 291M" and "AASHTO M 293M" in the third	
28	sentence of the 10th paragraph are revised to read "AASHTO M 291" and	
29	"AASHTO M 293" respectively.	
30		
31	9-06.5(4) Anchor Bolts	
32	The first sentence of the first paragraph is revised to read:	
33		
34	Anchor bolts shall meet the requirements of ASTM A 449 or AASHTO M	
35	164M.	
36		
37	The second paragraph is revised to read:	
38		
39	Nuts for anchor bolts shall conform to AASHTO M 291 Grade C, AASHTO M	
40	291M Class 8S, or AASHTO M 292M Grade 2H. Washers for anchor bolts	
41	shall meet the requirements of AASHTO M 293 or AASHTO M 293M.	
42		
43	9-06.5(5) Bolt, Nut, and Washer Specifications	
44	This section is revised to read:	
45		
46	The following referenced specifications are applicable as modified by these	
47	Specifications:	
48		

	Application	AASHTO Specification	ASTM Specifications
1			
2	Unfinished Bolts and		
3	Machine Nuts		A 307 Grade A, B
4	High Strength Bolts	M 164M Type 1, 2, 3	A 325M Type 1, 2, 3
5	for Structural Joints	M 253M Type 1, 2, 3	A 490M Type 1, 2, 3
6	Large Diameter High		
7	Strength Bolts		A 354 Grade BD
8	Anchor Bolts	M 1164M	A 449 Type 1, 2
9			A 325M
10	Nuts - Structural	M 291M Class 8S, 10S,	A 563M Class 8S,
11	Steel Bolts	8S3, and 10S3	10S, 8S3, and
12			10S3
13		M 292M Grade 2H	A 194M Grade 2H
14	Nuts - Anchor Bolts	M 291M Class 8S and	A 563M Class 8S
15		8S3	and 8S3
16		M 292M Grade 2H	A 194M Grade 2H
17		M 291 Grade C	
18	Nuts - ASTM A 307		
19	Bolts		A 563
20	Washers - High		
21	Strength Bolts	M 293M	F 436M
22	Washers - ASTM		
23	A 307 Bolts		F 844
24	Direct Tension		
25	Indicators		F 959M
26	Galvanizing	M 232	A 153
27		M 298 Class 55	B 695 Class 55

9-06.8 Steel Castings

The reference to "grade 70-36" in this section is revised to read "grade 485-250".